

**AMENDMENTS TO THE SEQUENCE LISTING**

**IN THE SEQUENCE LISTING**

Please replace the Sequence Listing of record with the Substitute Sequence Listing enclosed herewith.

SEQUENCE LISTING

<110> SAKAGUCHI, Nobuo

<120> TRANSGENIC MAMMAL CARRYING GANP GENE TRANSFERRED THEREINTO AND UTILIZATION THEREOF

<130> 4456-0104PUS1

<140> US 10/534,043

<141> 2005-05-05

<150> PCT/JP03/014221

<151> 2003-11-07

<150> PCT/JP02/11598

<151> 2002-11-07

<160> 105

<170> PatentIn version 3.2

<210> 1

<211> 6429

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (384)..(6299)

<400> 1

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gcggccggct tccggagtgt taagcatcg 240

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Met His Pro Val Asn Pro Phe Gly Gly Ser

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Ser Pro Ser Ala Phe Ala Val Ser Ser Thr Thr Gly Thr Tyr Gln

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Thr Lys Ser Pro Phe Arg Phe Gly Gln Pro Ser Leu Phe Gly Gln Asn

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Trp Leu Ser Ala Leu Leu Gln Leu	Lys Gln Leu Leu Gln Ala Lys		
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Arg Leu Ala Ser Leu Pro Ser Gln	Glu Pro Ser Thr Ile Ile Glu		
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Glu Gln Leu Cys Asp Ile Ser Trp	Pro Val Met Glu Phe	Ala Glu	
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Val Gly Gly Ser Gln Leu Leu Pro	His Leu His Trp Asn	Ser Pro	
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Cys Ser Met Val Ile Gln Tyr Thr	Ser Gln Ile Pro Ser	Ser Ser	
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cag aca cag cct gtc ctc cag tcc	cag gcg gag aac ctg	ctg tgc	5504
Gln Thr Gln Pro Val Leu Gln Ser	Gln Ala Glu Asn Leu	Leu Cys	
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Arg Thr Tyr Gln Lys Trp Lys Asn	Lys Ser Leu Ser Pro	Gly Gln	
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gag ttg ggg cct tct gtt gcc gag	atc ccg tgg gat gac	atc atc	5594
Glu Leu Gly Pro Ser Val Ala Glu	Ile Pro Trp Asp Asp	Ile Ile	
1725	1730	1735	
acc tta tgc atc aat cat aag ctg	agg gac tgg aca ccc	ccc agg	5639
Thr Leu Cys Ile Asn His Lys Leu	Arg Asp Trp Thr Pro	Pro Arg	
1740	1745	1750	
ctc cct gtc aca tta gag gcg ctg	agt gaa gat ggt caa	ata tgt	5684
Leu Pro Val Thr Leu Glu Ala Leu	Ser Glu Asp Gly Gln	Ile Cys	
1755	1760	1765	
gtg tat ttt ttc aaa aac ctt tta	aga aaa tac cac gtt	ccc tcg	5729
Val Tyr Phe Phe Lys Asn Leu Leu	Arg Lys Tyr His Val	Pro Ser	
1770	1775	1780	
tca tgg gaa cag gcc aga atg cag	acg cag cgg gaa ctg	cag ctg	5774
Ser Trp Glu Gln Ala Arg Met Gln	Thr Gln Arg Glu Leu	Gln Leu	
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agt cat gga cgt tcg ggg atg agg	tcc atc cat cct cct	aca agc	5819
Ser His Gly Arg Ser Gly Met Arg	Ser Ile His Pro Pro	Thr Ser	
1800	1805	1810	

act ttt cct act cca ttg ctt cat gta cac cag aaa ggg aag aaa	5864
Thr Phe Pro Thr Pro Leu Leu His Val His Gln Lys Gly Lys Lys	
1815 1820 1825	
aag gaa gag agt ggc cga gag ggg agc ctc agt aca gag gac ctc	5909
Lys Glu Glu Ser Gly Arg Glu Gly Ser Leu Ser Thr Glu Asp Leu	
1830 1835 1840	
ctg cgg ggg gct tct gca gaa gag ctc ctg gca cag agt ctg tcc	5954
Leu Arg Gly Ala Ser Ala Glu Glu Leu Leu Ala Gln Ser Leu Ser	
1845 1850 1855	
agc agt ctt ctg gaa gag aag gaa gag aac aag agg ttt gaa gat	5999
Ser Ser Leu Leu Glu Glu Lys Glu Glu Asn Lys Arg Phe Glu Asp	
1860 1865 1870	
caa ctt cag cag tgg tta tcg caa gac tca cag gca ttc aca gag	6044
Gln Leu Gln Gln Trp Leu Ser Gln Asp Ser Gln Ala Phe Thr Glu	
1875 1880 1885	
tca act cgg ctt cct ctc tac ctc cct cag acg cta gtg tcc ttt	6089
Ser Thr Arg Leu Pro Leu Tyr Leu Pro Gln Thr Leu Val Ser Phe	
1890 1895 1900	
cct gat tct atc aaa act cag acc atg gtg aaa aca tct aca agt	6134
Pro Asp Ser Ile Lys Thr Gln Thr Met Val Lys Thr Ser Thr Ser	
1905 1910 1915	
cct cag aat tca gga aca gga aag cag ttg agg ttc tca gag gca	6179
Pro Gln Asn Ser Gly Thr Gly Lys Gln Leu Arg Phe Ser Glu Ala	
1920 1925 1930	
tcc ggt tca tcc ctg acg gaa aag ctg aag ctc ctg gaa agg ctg	6224
Ser Gly Ser Ser Leu Thr Glu Lys Leu Lys Leu Leu Glu Arg Leu	
1935 1940 1945	
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Ile Gln Ser Ser Arg Ala Glu Glu Ala Ala Ser Glu Leu His Leu	
1950 1955 1960	
tct gca ctg ctg gag atg gtg gac atg tag ctgtctgacg ggagacggat	6319
Ser Ala Leu Leu Glu Met Val Asp Met	
1965 1970	
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35 40 45

Leu Ala Phe Ser Gln Val Pro Ser Phe Ala Thr Pro Ser Gly Gly Ser  
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His Ser Ser Ser Leu Pro Ala Phe Gly Leu Thr Gln Thr Ser Ser Val  
65 70 75 80

Gly Leu Phe Ser Ser Leu Glu Ser Thr Pro Ser Phe Ala Ala Thr Ser  
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Ser Ser Ser Val Pro Gly Asn Thr Ala Phe Ser Phe Lys Ser Thr Ser  
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Ser Val Gly Val Phe Pro Ser Gly Ala Thr Phe Gly Pro Glu Thr Gly  
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Glu Val Ala Gly Ser Gly Phe Arg Lys Thr Glu Phe Lys Phe Lys Pro  
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Leu Glu Asn Ala Val Phe Lys Pro Ile Pro Gly Pro Glu Ser Glu Pro  
145 150 155 160

Glu Lys Thr Gln Ser Gln Ile Ser Ser Gly Phe Phe Thr Phe Ser His  
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Pro Val Gly Ser Gly Ser Gly Leu Thr Pro Phe Ser Phe Pro Gln  
180 185 190

Val Thr Asn Ser Ser Val Thr Ser Ser Ser Phe Ile Phe Ser Lys Pro  
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Val Thr Ser Asn Thr Pro Ala Phe Ala Ser Pro Leu Ser Asn Gln Asn  
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Val Glu Glu Glu Lys Arg Val Ser Thr Ser Ala Phe Gly Ser Ser Asn  
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Ser Ser Phe Ser Thr Phe Pro Thr Ala Ser Pro Gly Ser Leu Gly Glu  
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Pro Phe Pro Ala Asn Lys Pro Ser Leu Arg Gln Gly Cys Glu Glu Ala  
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Ile Ser Gln Val Glu Pro Leu Pro Thr Leu Met Lys Gly Leu Lys Arg  
275 280 285

Lys Glu Asp Gln Asp Arg Ser Pro Arg Arg His Cys His Glu Ala Ala  
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Glu Asp Pro Asp Pro Leu Ser Arg Gly Asp His Pro Pro Asp Lys Arg  
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Pro Val Arg Leu Asn Arg Pro Arg Gly Gly Thr Leu Phe Gly Arg Thr  
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Ile Gln Glu Val Phe Lys Ser Asn Lys Glu Ala Gly Arg Leu Gly Ser  
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Lys Glu Ser Lys Glu Ser Gly Phe Ala Glu Pro Gly Glu Ser Asp His  
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Ala Ala Val Pro Gly Gly Ser Gln Ser Thr Met Val Pro Ser Arg Leu  
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Pro Ala Val Thr Lys Glu Glu Glu Ser Arg Asp Glu Lys Glu Asp  
385 390 395 400

Ser Leu Arg Gly Lys Ser Val Arg Gln Ser Lys Arg Arg Glu Glu Trp  
405 410 415

Ile Tyr Ser Leu Gly Gly Val Ser Ser Leu Glu Leu Thr Ala Ile Gln  
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Cys Lys Asn Ile Pro Asp Tyr Leu Asn Asp Arg Ala Ile Leu Glu Lys  
435 440 445

His Phe Ser Lys Ile Ala Lys Val Gln Arg Val Phe Thr Arg Arg Ser  
450 455 460

Lys Lys Leu Ala Val Ile His Phe Phe Asp His Ala Ser Ala Ala Leu  
465 470 475 480

Ala Arg Lys Lys Gly Lys Gly Leu His Lys Asp Val Val Ile Phe Trp  
485 490 495

His Lys Lys Ile Ser Pro Ser Lys Lys Leu Phe Pro Leu Lys Glu  
500 505 510

Lys Leu Gly Glu Ser Glu Ala Ser Gln Gly Ile Glu Asp Ser Pro Phe  
515 520 525

Gln His Ser Pro Leu Ser Lys Pro Ile Val Arg Pro Ala Ala Gly Ser  
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Leu Leu Ser Lys Ser Ser Pro Val Lys Lys Pro Ser Leu Leu Lys Met  
545 550 555 560

His Gln Phe Glu Ala Asp Pro Phe Asp Ser Gly Ser Glu Gly Ser Glu  
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Gly Leu Gly Ser Cys Val Ser Ser Leu Ser Thr Leu Ile Gly Thr Val  
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Ala Asp Thr Ser Glu Glu Lys Tyr Arg Leu Leu Asp Gln Arg Asp Arg  
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Ile Met Arg Gln Ala Arg Val Lys Arg Thr Asp Leu Asp Lys Ala Arg  
610 615 620

Ala Phe Val Gly Thr Cys Pro Asp Met Cys Pro Glu Lys Glu Arg Tyr  
625 630 635 640

Leu Arg Glu Thr Arg Ser Gln Leu Ser Val Phe Glu Val Val Pro Gly  
645 650 655

Thr Asp Gln Val Asp His Ala Ala Ala Val Lys Glu Tyr Ser Arg Ser  
660 665 670

Ser Ala Asp Gln Glu Glu Pro Leu Pro His Glu Leu Arg Pro Ser Ala  
675 680 685

Val Leu Ser Arg Thr Met Asp Tyr Leu Val Thr Gln Ile Met Asp Gln  
690 695 700

Lys Glu Gly Ser Leu Arg Asp Trp Tyr Asp Phe Val Trp Asn Arg Thr  
705 710 715 720

Arg Gly Ile Arg Lys Asp Ile Thr Gln Gln His Leu Cys Asp Pro Leu  
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Thr Val Ser Leu Ile Glu Lys Cys Thr Arg Phe His Ile His Cys Ala  
740 745 750

His Phe Met Cys Glu Glu Pro Met Ser Ser Phe Asp Ala Lys Ile Asn  
755 760 765

Asn Glu Asn Met Thr Lys Cys Leu Gln Ser Leu Lys Glu Met Tyr Gln  
770 775 780

Asp Leu Arg Asn Lys Gly Val Phe Cys Ala Ser Glu Ala Glu Phe Gln  
785 790 795 800

Gly Tyr Asn Val Leu Leu Asn Leu Asn Lys Gly Asp Ile Leu Arg Glu  
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Val Gln Gln Phe His Pro Asp Val Arg Asn Ser Pro Glu Val Asn Phe  
820 825 830

Ala Val Gln Ala Phe Ala Ala Leu Asn Ser Asn Asn Phe Val Arg Phe  
835 840 845

Phe Lys Leu Val Gln Ser Ala Ser Tyr Leu Asn Ala Cys Leu Leu His  
850 855 860

Cys Tyr Phe Asn Gln Ile Arg Lys Asp Ala Leu Arg Ala Leu Asn Val  
865 870 875 880

Ala Tyr Thr Val Ser Thr Gln Arg Ser Thr Val Phe Pro Leu Asp Gly  
885 890 895

Val Val Arg Met Leu Leu Phe Arg Asp Ser Glu Glu Ala Thr Asn Phe  
900 905 910

Leu Asn Tyr His Gly Leu Thr Val Ala Asp Gly Cys Val Glu Leu Asn

915

920

925

Arg Ser Ala Phe Leu Glu Pro Glu Gly Leu Cys Lys Ala Arg Lys Ser  
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Val Phe Ile Gly Arg Lys Leu Thr Val Ser Val Gly Glu Val Val Asn  
945 950 955 960

Gly Gly Pro Leu Pro Pro Val Pro Arg His Thr Pro Val Cys Ser Phe  
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980 985 990

Ile Ser Thr Gln Arg Ala Gly Gly Asp Pro Ala Gly Gly Gly Arg Gly  
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Leu Gln Val Asp Cys Glu Glu Val Ser Ser Ala Gly Ala Ala Tyr  
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Val Lys Ile Asp Gln Lys Val Arg Val Ala Arg Cys Cys Glu Ala  
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Val Cys Ala His Leu Val Asp Leu Phe Leu Ala Glu Glu Ile Phe  
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Gln Thr Ala Lys Glu Thr Leu Gln Glu Leu Gln Cys Phe Cys Lys  
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Tyr Leu Gln Arg Trp Arg Glu Ala Val Ala Ala Arg Lys Lys Phe  
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Arg Arg Gln Met Arg Ala Phe Pro Ala Ala Pro Cys Cys Val Asp  
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Ile Thr Glu Glu Asn Leu Ala Lys Gly Leu Leu Asp Leu Gly His  
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Ala Gly Lys Val Gly Val Ser Cys Thr Arg Leu Arg Arg Leu Arg  
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Asn Lys Thr Ala His Gln Ile Lys Val Gln His Phe His Gln Gln  
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Leu Leu Arg Asn Ala Ala Trp Ala Pro Leu Asp Leu Pro Ser Ile  
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Val Ser Glu His Leu Pro Met Lys Gln Lys Arg Arg Phe Trp Lys  
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Pro Gly Arg Ile Leu Glu Asn Trp Leu Lys Val Lys Phe Thr Gly  
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Asp Asp Ser Met Val Gly Asp Ile Gly Asp Asn Ala Gly Asp Ile  
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Gln Thr Leu Ser Val Phe Asn Thr Leu Ser Ser Lys Gly Asp Gln  
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Thr Val Ser Val Asn Val Cys Ile Lys Val Ala His Gly Thr Leu  
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Ser Asp Ser Ala Leu Asp Ala Val Glu Thr Gln Lys Asp Leu Leu  
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Gly Thr Ser Gly Leu Met Leu Leu Leu Pro Pro Lys Val Lys Ser  
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Lys Leu Ile Ser Asp Tyr Ile Val Val Glu Ile Pro Asp Ser Val  
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Asn Asp Leu Gln Gly Thr Val Lys Val Ser Gly Ala Val Gln Trp  
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Leu Pro His Leu His Trp Asn Ser Pro Glu His Leu Ala Trp Leu  
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Pro Pro Gly Ala Pro Trp Leu Pro Val Cys Ser Met Val Ile Gln  
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Tyr Thr Ser Gln Ile Pro Ser Ser Ser Gln Thr Gln Pro Val Leu  
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Gln Ser Gln Ala Glu Asn Leu Leu Cys Arg Thr Tyr Gln Lys Trp  
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Lys Asn Lys Ser Leu Ser Pro Gly Gln Glu Leu Gly Pro Ser Val  
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Ala Glu Ile Pro Trp Asp Asp Ile Ile Thr Leu Cys Ile Asn His  
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Ala Leu Ser Glu Asp Gly Gln Ile Cys Val Tyr Phe Phe Lys Asn  
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Leu Leu Arg Lys Tyr His Val Pro Ser Ser Trp Glu Gln Ala Arg

1775

1780

1785

Met Gln Thr Gln Arg Glu Leu Gln Leu Ser His Gly Arg Ser Gly  
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Met Arg Ser Ile His Pro Pro Thr Ser Thr Phe Pro Thr Pro Leu  
1805 1810 1815

Leu His Val His Gln Lys Gly Lys Lys Lys Glu Glu Ser Gly Arg  
1820 1825 1830

Glu Gly Ser Leu Ser Thr Glu Asp Leu Leu Arg Gly Ala Ser Ala  
1835 1840 1845

Glu Glu Leu Leu Ala Gln Ser Leu Ser Ser Ser Leu Leu Glu Glu  
1850 1855 1860

Lys Glu Glu Asn Lys Arg Phe Glu Asp Gln Leu Gln Gln Trp Leu  
1865 1870 1875

Ser Gln Asp Ser Gln Ala Phe Thr Glu Ser Thr Arg Leu Pro Leu  
1880 1885 1890

Tyr Leu Pro Gln Thr Leu Val Ser Phe Pro Asp Ser Ile Lys Thr  
1895 1900 1905

Gln Thr Met Val Lys Thr Ser Thr Ser Pro Gln Asn Ser Gly Thr  
1910 1915 1920

Gly Lys Gln Leu Arg Phe Ser Glu Ala Ser Gly Ser Ser Leu Thr  
1925 1930 1935

Glu Lys Leu Lys Leu Leu Glu Arg Leu Ile Gln Ser Ser Arg Ala  
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 Phe Ser Gly Gln Gln Pro Ser Ala Phe Ser Ala Ser Ser Ser Asn Val  
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 Gly Thr Leu Pro Ser Lys Pro Pro Phe Arg Phe Gly Gln Pro Ser Leu  
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 Val Ser Ser Phe Pro Ala Ser Ser Gly Val Ser His Ser Ser Ser Val  
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 Gln Thr Leu Gly Phe Thr Gln Thr Ser Ser Val Gly Pro Phe Ser Gly  
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 120 125 130  
  
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Ser Ser Ala Pro Gly Gly Leu Ala Pro Phe Ser Phe Pro Gln Val Thr				
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Ser Ser Ala Thr Thr Ser Asn Phe Thr Phe Ser Lys Pro Val Ser				
agt aat aat tca tta tct gcc ttt acc cct gct ttg tca aac caa aat	215	220	225	727
Ser Asn Asn Ser Leu Ser Ala Phe Thr Pro Ala Leu Ser Asn Gln Asn				
gta gag gaa gag aag aga gga cct aag tca ata ttt gga agt tct aat	235	240	245	775
Val Glu Glu Glu Lys Arg Gly Pro Lys Ser Ile Phe Gly Ser Ser Asn				
aat agc ttc agt agc ttc cct gta tca tct gcg gtt ttg ggc gaa cct	250	255	260	823
Asn Ser Phe Ser Ser Phe Pro Val Ser Ser Ala Val Leu Gly Glu Pro				
ttc cag gct agc aaa gca ggt gtc agg cag ggg tgt gaa gaa gct gtt	265	270	275	871
Phe Gln Ala Ser Lys Ala Gly Val Arg Gln Gly Cys Glu Glu Ala Val				
tcc cag gtg gaa cca ctt ccc agc cta atg aaa gga ctg aaa agg aag	280	285	290	919
Ser Gln Val Glu Pro Leu Pro Ser Leu Met Lys Gly Leu Lys Arg Lys				
gag gac cag gat cgc tcc cca agg aga cat ggc cac gag cca gca gaa	295	300	305	967
Glu Asp Gln Asp Arg Ser Pro Arg Arg His Gly His Glu Pro Ala Glu				
gat tcg gat cct ctg tcc cgg ggc gat cat cct cca gac aaa cga cct	315	320	325	1015
Asp Ser Asp Pro Leu Ser Arg Gly Asp His Pro Pro Asp Lys Arg Pro				
gtc cgc ctg aat cga ccc cgg gga ggt act tta ttt ggt cgg acg ata	330	335	340	1063
Val Arg Leu Asn Arg Pro Arg Gly Gly Thr Leu Phe Gly Arg Thr Ile				
cag gat gtt ttc aaa agc aat aag gaa gta ggt cgt ctg ggc aac aag	345	350	355	1111
Gln Asp Val Phe Lys Ser Asn Lys Glu Val Gly Arg Leu Gly Asn Lys				
gag gcc aaa aag gaa act ggc ttt gtt gag tct gca gaa agt gac cac	360	365	370	1159
Glu Ala Lys Lys Glu Thr Gly Phe Val Glu Ser Ala Glu Ser Asp His				
atg gct atc cca gga ggg aat cag tct gtc ctg gca cct tcc cgg att	375	380	385	1207
Met Ala Ile Pro Gly Gly Asn Gln Ser Val Leu Ala Pro Ser Arg Ile				
cca ggt gtg aat aaa gag gaa act gaa agt aga gag aag aaa gaa	395	400	405	1255
Pro Gly Val Asn Lys Glu Glu Glu Thr Glu Ser Arg Glu Lys Lys Glu				
gat tct cta aga gga act ccg gcg cgt cag agt aac aga agc gag agc				1303

Asp Ser Leu Arg Gly Thr Pro Ala Arg Gln Ser Asn Arg Ser Glu Ser			
410	415	420	
aca gac agt ctt ggg ggc ttg tct ccc tct gaa gtc aca gcc atc cag		1351	
Thr Asp Ser Leu Gly Gly Leu Ser Pro Ser Glu Val Thr Ala Ile Gln			
425	430	435	
tgc aag aac atc cct gac tac ctc aac gac agg acc att ctg gag aac		1399	
Cys Lys Asn Ile Pro Asp Tyr Leu Asn Asp Arg Thr Ile Leu Glu Asn			
440	445	450	
cat ttt ggc aaa att gct aaa gtg cag cgc atc ttt acc agg cgc agc		1447	
His Phe Gly Lys Ile Ala Lys Val Gln Arg Ile Phe Thr Arg Arg Ser			
455	460	465	470
aaa aag ctt gca gtg gta cat ttc ttt gat cat gca tct gca gcc ctg		1495	
Lys Lys Leu Ala Val Val His Phe Phe Asp His Ala Ser Ala Ala Leu			
475	480	485	
gct aga aag aag ggg aaa agt ttg cat aaa gac atg gct atc ttt tgg		1543	
Ala Arg Lys Lys Gly Lys Ser Leu His Lys Asp Met Ala Ile Phe Trp			
490	495	500	
cac agg aag aaa ata agc ccc aat aag aaa ccc ttt tcc ctg aag gag		1591	
His Arg Lys Lys Ile Ser Pro Asn Lys Lys Pro Phe Ser Leu Lys Glu			
505	510	515	
aag aaa cca ggt gac ggt gaa gtc agc ccg agc aca gag gat gca ccc		1639	
Lys Lys Pro Gly Asp Gly Glu Val Ser Pro Ser Thr Glu Asp Ala Pro			
520	525	530	
ttt cag cac tct cct ttg ggc aag gcc gca ggg agg act ggt gct agc		1687	
Phe Gln His Ser Pro Leu Gly Lys Ala Ala Gly Arg Thr Gly Ala Ser			
535	540	545	550
agc ctc ctg aat aaa agc tct cca gtg aag aag cca agt ctt cta aag		1735	
Ser Leu Leu Asn Lys Ser Ser Pro Val Lys Lys Pro Ser Leu Leu Lys			
555	560	565	
gcc cac caa ttc gag gga gac tct ttt gac tca gcc tcc gag ggc tcc		1783	
Ala His Gln Phe Glu Gly Asp Ser Phe Asp Ser Ala Ser Glu Gly Ser			
570	575	580	
gag ggc ctc ggg cca tgt gtg ctc tcc ctc agt acc ctg ata ggc act		1831	
Glu Gly Leu Gly Pro Cys Val Leu Ser Leu Ser Thr Leu Ile Gly Thr			
585	590	595	
gtg gct gag aca tcc aag gag aag tac cgc ctg ctt gac cag aga gac		1879	
Val Ala Glu Thr Ser Lys Glu Lys Tyr Arg Leu Leu Asp Gln Arg Asp			
600	605	610	
agg atc atg cgg caa gct cgg gtg aag aga acc gat ctg gac aaa gcg		1927	
Arg Ile Met Arg Gln Ala Arg Val Lys Arg Thr Asp Leu Asp Lys Ala			
615	620	625	630
agg act ttt gtt ggc acc tgc ctg gat atg tgt cct gag aag gag agg		1975	
Arg Thr Phe Val Gly Thr Cys Leu Asp Met Cys Pro Glu Lys Glu Arg			

635	640	645	
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ggg act gac cag gtg gac cac gca gca gct gtg aaa gag tac agt cg <sup>g</sup> Gly Thr Asp Gln Val Asp His Ala Ala Val Lys Glu Tyr Ser Arg 665 670 675			2071
tcc tcg gc <sup>g</sup> gat cag g <sup>ag</sup> gag ccc ctg ccc cac gag ctg cg <sup>g</sup> ccc ttg Ser Ser Ala Asp Gln Glu Glu Pro Leu Pro His Glu Leu Arg Pro Leu 680 685 690			2119
cca gtg ctc agc agg acc atg gac tac ctg gtg acc cag atc atg gac Pro Val Leu Ser Arg Thr Met Asp Tyr Leu Val Thr Gln Ile Met Asp 695 700 705 710			2167
cag aag gag ggc agc ctg cg <sup>g</sup> gat tgg tat gac ttc gtg tgg aac cg <sup>c</sup> Gln Lys Glu Gly Ser Leu Arg Asp Trp Tyr Asp Phe Val Trp Asn Arg 715 720 725			2215
acg cgt ggc ata cg <sup>g</sup> aag gat atc acg cag cag cac ctc tgt gac ccc Thr Arg Gly Ile Arg Lys Asp Ile Thr Gln Gln His Leu Cys Asp Pro 730 735 740			2263
ctg acg gtg tcc ctg att gag aag tgc acc cg <sup>g</sup> ttt cac atc cac tgt Leu Thr Val Ser Leu Ile Glu Lys Cys Thr Arg Phe His Ile His Cys 745 750 755			2311
gcc cac ttc atg tgt gag gag ccc atg tcc tcc ttt gat gcc aag atc Ala His Phe Met Cys Glu Glu Pro Met Ser Ser Phe Asp Ala Lys Ile 760 765 770			2359
aat aat gag aac atg acc aag tgc ctg cag agc ctg aag gag atg tac Asn Asn Glu Asn Met Thr Lys Cys Leu Gln Ser Leu Lys Glu Met Tyr 775 780 785 790			2407
cag gac ctg aga aac aag ggt gtc ttc tgt gcc agc gaa gc <sup>g</sup> gag tt <sup>c</sup> Gln Asp Leu Arg Asn Lys Gly Val Phe Cys Ala Ser Glu Ala Glu Phe 795 800 805			2455
cag ggc tac aat gtt ctg ctc agt ctc aac aag gga gac atc cta aga Gln Gly Tyr Asn Val Leu Leu Ser Leu Asn Lys Gly Asp Ile Leu Arg 810 815 820			2503
gaa gta caa cag ttc cat cct gct gtt aga aac tca tct gag gtg aaa Glu Val Gln Gln Phe His Pro Ala Val Arg Asn Ser Ser Glu Val Lys 825 830 835			2551
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His Cys Tyr Phe Ser Gln Ile Arg Lys Asp Ala Leu Arg Ala Leu Asn	
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Phe Ala Tyr Thr Val Ser Thr Gln Arg Ser Thr Ile Phe Pro Leu Asp	
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Gly Val Val Arg Met Leu Leu Phe Arg Asp Cys Glu Glu Ala Thr Asp	
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Phe Leu Thr Cys His Gly Leu Thr Val Ser Asp Gly Cys Val Glu Leu	
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Asn Arg Ser Ala Phe Leu Glu Pro Glu Gly Leu Ser Lys Thr Arg Lys	
935 940 945 950	
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Ser Val Phe Ile Thr Arg Lys Leu Thr Val Ser Val Gly Glu Ile Val	
955 960 965	
aac gga ggg cca ttg ccc ccc gtc cct cgt cac acc cct gtg tgc agc	2983
Asn Gly Pro Leu Pro Pro Val Pro Arg His Thr Pro Val Cys Ser	
970 975 980	
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Phe Asn Ser Gln Asn Lys Tyr Ile Gly Glu Ser Leu Ala Ala Glu Leu	
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Pro Val Ser Thr Gln Arg Pro Gly Ser Asp Thr Val Gly Gly Gly	
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Arg Gly Glu Glu Cys Gly Val Glu Pro Asp Ala Pro Leu Ser Ser	
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Leu Pro Gln Ser Leu Pro Ala Pro Ala Pro Ser Pro Val Pro Leu	
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Pro Pro Val Leu Ala Leu Thr Pro Ser Val Ala Pro Ser Leu Phe	
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Gln Leu Ser Val Gln Pro Glu Pro Pro Pro Glu Pro Val Pro	
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Met Tyr Ser Asp Glu Asp Leu Ala Gln Val Val Asp Glu Leu Ile	
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Gln	Glu	Ala	Leu	Gln	Arg	Asp	Cys	Glu	Glu	Val	Gly	Ser	Ala	Gly	
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gct	gcc	tac	gca	gct	gcc	gcc	ctg	ggt	gtt	tct	aat	gct	gct	atg	3391
Ala	Ala	Tyr	Ala	Ala	Ala	Ala	Leu	Gly	Val	Ser	Asn	Ala	Ala	Met	
1105							1110					1115			
gag	gat	ttg	tta	aca	gct	gca	acc	acg	ggc	att	ttg	agg	cac	att	3436
Glu	Asp	Leu	Leu	Thr	Ala	Ala	Thr	Thr	Gly	Ile	Leu	Arg	His	Ile	
1120							1125					1130			
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Ala	Ala	Glu	Glu	Val	Ser	Lys	Glu	Arg	Glu	Arg	Arg	Glu	Gln	Glu	
1135							1140					1145			
agg	cag	cg	gct	gaa	gag	gaa	agg	ttg	aaa	caa	gag	aga	gag	ctg	3526
Arg	Gln	Arg	Ala	Glu	Glu	Glu	Arg	Leu	Lys	Gln	Glu	Arg	Glu	Leu	
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Val	Leu	Ser	Glu	Leu	Ser	Gln	Gly	Leu	Ala	Val	Glu	Leu	Met	Glu	
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Arg	Val	Met	Met	Glu	Phe	Val	Arg	Glu	Thr	Cys	Ser	Gln	Glu	Leu	
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Lys	Asn	Ala	Val	Glu	Thr	Asp	Gln	Arg	Val	Arg	Val	Ala	Arg	Cys	
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Cys	Glu	Asp	Val	Cys	Ala	His	Leu	Val	Asp	Leu	Phe	Leu	Val	Glu	
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Glu	Ile	Phe	Gln	Thr	Ala	Lys	Glu	Thr	Leu	Gln	Glu	Leu	Gln	Cys	
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Phe	Cys	Lys	Tyr	Leu	Gln	Arg	Trp	Arg	Glu	Ala	Val	Thr	Ala	Arg	
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Lys	Lys	Leu	Arg	Arg	Gln	Met	Arg	Ala	Phe	Pro	Ala	Ala	Pro	Cys	
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Cys	Val	Asp	Val	Ser	Asp	Arg	Leu	Arg	Ala	Leu	Ala	Pro	Ser	Ala	
1270							1275					1280			
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Glu	Cys	Pro	Ile	Ala	Glu	Glu	Asn	Leu	Ala	Arg	Gly	Leu	Leu	Asp	
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Tyr	Gln	Gln	Leu	Leu	Ser	Asp	Val	Ala	Trp	Ala	Ser	Leu	Asp	Leu		
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Pro	Ser	Leu	Val	Ala	Glu	His	Leu	Pro	Gly	Arg	Gln	Glu	His	Val		
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Phe	Trp	Lys	Leu	Val	Leu	Val	Leu	Pro	Asp	Val	Glu	Glu	Gln	Ser		
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Asp	Leu	Leu	Gly	Ala	Ser	Gly	Leu	Met	Leu	Leu	Leu	Pro	Pro	Lys		
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Pro	Ala	Leu	Pro	Leu	Val	Val	Leu	Val	Pro	Ser	Pro	Gly	Gly	Asp		
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Val Ser Ala Lys Leu Ile Ser	Asp Tyr Thr Val Thr	Glu Ile Pro	
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Asp Thr Ile Asn Asp Leu Gln	Gly Ser Thr Lys Val	Leu Gln Ala	
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Val Gln Trp Leu Val Ser His	Cys Pro His Ser Leu	Asp Leu Cys	
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Cys Gln Thr Leu Ile Gln Tyr	Val Glu Asp Gly Ile	Gly His Glu	
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Phe Ser Gly Arg Phe Phe His	Asp Arg Arg Glu Arg	Arg Leu Gly	
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Gly Leu Ala Ser Gln Glu Pro	Gly Ala Ile Ile Glu	Leu Phe Asn	
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Ser Val Leu Gln Phe Leu Ala	Ser Val Val Ser Ser	Glu Gln Leu	
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Cys Asp Leu Ser Trp Pro Val	Thr Glu Phe Ala Glu	Ala Gly Gly	
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agc cgg ctg ctt cct cac ctg	cac tgg aat gcc cca	gag cac ctg	5011
Ser Arg Leu Leu Pro His Leu	His Trp Asn Ala Pro	Glu His Leu	
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gcc tgg ctg aag cag gct gtg	ctc ggg ttc cag ctt	ccg cag atg	5056
Ala Trp Leu Lys Gln Ala Val	Leu Gly Phe Gln Leu	Pro Gln Met	
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gac ctt cca ccc ctg ggg gcc	ccc tgg ctc ccc gtg	tgc tcc atg	5101
Asp Leu Pro Pro Leu Gly Ala	Pro Trp Leu Pro Val	Cys Ser Met	
1675	1680	1685	
gtt gtc cag tac gcc tcc cag	atc ccc agc tca cgc	cag aca cag	5146
Val Val Gln Tyr Ala Ser Gln	Ile Pro Ser Ser Arg	Gln Thr Gln	
1690	1695	1700	
cct gtc ctc cag tcc cag gtg	gag aac ctg ctc cac	aga acc tac	5191
Pro Val Leu Gln Ser Gln Val	Glu Asn Leu Leu His	Arg Thr Tyr	
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Cys Arg Trp Lys Ser Lys Ser	Pro Ser Pro Val His	Gly Ala Gly	
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Pro Ser Val Met Glu Ile Pro	Trp Asp Asp Leu Ile	Ala Leu Cys	
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Ile Asn His Lys Leu Arg Asp	Trp Thr Pro Pro Arg	Leu Pro Val	
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aca tca gag gcg ctg agt gaa	gat ggt cag ata tgt	gtg tat ttt	5371
Thr Ser Glu Ala Leu Ser Glu	Asp Gly Gln Ile Cys	Val Tyr Phe	
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Phe Lys Asn Asp Leu Lys	Tyr Asp Val Pro Leu	Ser Trp Glu	
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Gln Ala Arg Leu Gln Thr Gln	Lys Glu Leu Gln Leu	Arg Glu Gly	
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Arg Leu Ala Ile Lys Pro Phe	His Pro Ser Ala Asn	Asn Phe Pro	
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Ile Pro Leu Leu His Met His	Arg Asn Trp Lys Arg	Ser Thr Glu	
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Cys Ala Gln Glu Gly Arg Ile	Pro Ser Thr Glu Asp	Leu Met Arg	
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Gly Ala Ser Ala Glu Glu Leu	Leu Ala Gln Cys Leu	Ser Ser Ser	
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ctg ctg ctg gag aaa gaa gag	aac aag agg ttt gaa	gat cag ctt	5686
Leu Leu Leu Glu Lys Glu Glu	Asn. Lys Arg Phe Glu	Asp Gln Leu	
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cag caa tgg ttg tct gaa gac	tca gga gca ttt acg	gat tta act	5731
Gln Gln Trp Leu Ser Glu Asp	Ser Gly Ala Phe Thr	Asp Leu Thr	
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Ser Leu Pro Leu Tyr Leu Pro	Gln Thr Leu Val Ser	Leu Ser His	
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act att gaa cct gtg atg aaa	aca tct gta act act	agc cca cag	5821
Thr Ile Glu Pro Val Met Lys	Thr Ser Val Thr Thr	Ser Pro Gln	
1915	1920	1925	
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Ser Asp Met Met Arg Glu Gln	Leu Gln Leu Ser Glu	Ala Thr Gly	
1930	1935	1940	

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Thr Cys Leu Gly Glu Arg Leu Lys His Leu Glu Arg Leu Ile Arg  
1945 1950 1955

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1975 1980

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Ser Ser Gly Phe Ser Gln Val Ser Ser Phe Pro Ala Ser Ser Gly Val  
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Ser His Ser Ser Ser Val Gln Thr Leu Gly Phe Thr Gln Thr Ser Ser  
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Ser Gly Pro Ser Ser Ser Val Leu Gly Asn Thr Gly Phe Ser Phe  
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Lys Ser Pro Thr Ser Val Gly Ala Phe Pro Ser Thr Ser Ala Phe Gly  
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Gln Glu Ala Gly Glu Ile Val Asn Ser Gly Phe Gly Lys Thr Glu Phe

130

135

140

Ser Phe Lys Pro Leu Glu Asn Ala Val Phe Lys Pro Ile Leu Gly Ala  
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Ser Phe Pro Gln Val Thr Ser Ser Ala Thr Thr Ser Asn Phe Thr  
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Pro Pro Asp Lys Arg Pro Val Arg Leu Asn Arg Pro Arg Gly Gly Thr  
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Ile Phe Thr Arg Arg Ser Lys Lys Leu Ala Val Val His Phe Phe Asp  
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His Ala Ser Ala Ala Leu Ala Arg Lys Lys Gly Lys Ser Leu His Lys  
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675 680 685

His Glu Leu Arg Pro Leu Pro Val Leu Ser Arg Thr Met Asp Tyr Leu  
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Val Thr Gln Ile Met Asp Gln Lys Glu Gly Ser Leu Arg Asp Trp Tyr  
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Asp Phe Val Trp Asn Arg Thr Arg Gly Ile Arg Lys Asp Ile Thr Gln  
725 730 735

Gln His Leu Cys Asp Pro Leu Thr Val Ser Leu Ile Glu Lys Cys Thr  
740 745 750

Arg Phe His Ile His Cys Ala His Phe Met Cys Glu Glu Pro Met Ser  
755 760 765

Ser Phe Asp Ala Lys Ile Asn Asn Glu Asn Met Thr Lys Cys Leu Gln  
770 775 780

Ser Leu Lys Glu Met Tyr Gln Asp Leu Arg Asn Lys Gly Val Phe Cys  
785 790 795 800

Ala Ser Glu Ala Glu Phe Gln Gly Tyr Asn Val Leu Leu Ser Leu Asn  
805 810 815

Lys Gly Asp Ile Leu Arg Glu Val Gln Gln Phe His Pro Ala Val Arg  
820 825 830

Asn Ser Ser Glu Val Lys Phe Ala Val Gln Ala Phe Ala Ala Leu Asn  
835 840 845

Ser Asn Asn Phe Val Arg Phe Phe Lys Leu Val Gln Ser Ala Ser Tyr  
850 855 860

Leu Asn Ala Cys Leu Leu His Cys Tyr Phe Ser Gln Ile Arg Lys Asp  
865 870 875 880

Ala Leu Arg Ala Leu Asn Phe Ala Tyr Thr Val Ser Thr Gln Arg Ser  
885 890 895

Thr Ile Phe Pro Leu Asp Gly Val Val Arg Met Leu Leu Phe Arg Asp  
900 905 910

Cys Glu Glu Ala Thr Asp Phe Leu Thr Cys His Gly Leu Thr Val Ser  
915 920 925

Asp Gly Cys Val Glu Leu Asn Arg Ser Ala Phe Leu Glu Pro Glu Gly  
930 935 940

Leu Ser Lys Thr Arg Lys Ser Val Phe Ile Thr Arg Lys Leu Thr Val  
945 950 955 960

Ser Val Gly Glu Ile Val Asn Gly Gly Pro Leu Pro Pro Val Pro Arg  
965 970 975

His Thr Pro Val Cys Ser Phe Asn Ser Gln Asn Lys Tyr Ile Gly Glu  
980 985 990

Ser Leu Ala Ala Glu Leu Pro Val Ser Thr Gln Arg Pro Gly Ser Asp  
995 1000 1005

Thr Val Gly Gly Gly Arg Gly Glu Glu Cys Gly Val Glu Pro Asp  
1010 1015 1020

Ala Pro Leu Ser Ser Leu Pro Gln Ser Leu Pro Ala Pro Ala Pro  
1025 1030 1035

Ser Pro Val Pro Leu Pro Pro Val Leu Ala Leu Thr Pro Ser Val

1040

1045

1050

Ala Pro Ser Leu Phe Gln Leu Ser Val Gln Pro Glu Pro Pro Pro  
1055 1060 1065

Pro Glu Pro Val Pro Met Tyr Ser Asp Glu Asp Leu Ala Gln Val  
1070 1075 1080

Val Asp Glu Leu Ile Gln Glu Ala Leu Gln Arg Asp Cys Glu Glu  
1085 1090 1095

Val Gly Ser Ala Gly Ala Ala Tyr Ala Ala Ala Leu Gly Val  
1100 1105 1110

Ser Asn Ala Ala Met Glu Asp Leu Leu Thr Ala Ala Thr Thr Gly  
1115 1120 1125

Ile Leu Arg His Ile Ala Ala Glu Glu Val Ser Lys Glu Arg Glu  
1130 1135 1140

Arg Arg Glu Gln Glu Arg Gln Arg Ala Glu Glu Glu Arg Leu Lys  
1145 1150 1155

Gln Glu Arg Glu Leu Val Leu Ser Glu Leu Ser Gln Gly Leu Ala  
1160 1165 1170

Val Glu Leu Met Glu Arg Val Met Met Glu Phe Val Arg Glu Thr  
1175 1180 1185

Cys Ser Gln Glu Leu Lys Asn Ala Val Glu Thr Asp Gln Arg Val  
1190 1195 1200

Arg Val Ala Arg Cys Cys Glu Asp Val Cys Ala His Leu Val Asp  
1205 1210 1215

Leu Phe Leu Val Glu Glu Ile Phe Gln Thr Ala Lys Glu Thr Leu  
1220 1225 1230

Gln Glu Leu Gln Cys Phe Cys Lys Tyr Leu Gln Arg Trp Arg Glu  
1235 1240 1245

Ala Val Thr Ala Arg Lys Lys Leu Arg Arg Gln Met, Arg Ala Phe  
1250 1255 1260

Pro Ala Ala Pro Cys Cys Val Asp Val Ser Asp Arg Leu Arg Ala  
1265 1270 1275

Leu Ala Pro Ser Ala Glu Cys Pro Ile Ala Glu Glu Asn Leu Ala  
1280 1285 1290

Arg Gly Leu Leu Asp Leu Gly His Ala Gly Arg Leu Gly Ile Ser  
1295 1300 1305

Cys Thr Arg Leu Arg Arg Leu Arg Asn Lys Thr Ala His Gln Met  
1310 1315 1320

Lys Val Gln His Phe Tyr Gln Gln Leu Leu Ser Asp Val Ala Trp  
1325 1330 1335

Ala Ser Leu Asp Leu Pro Ser Leu Val Ala Glu His Leu Pro Gly  
1340 1345 1350

Arg Gln Glu His Val Phe Trp Lys Leu Val Leu Val Leu Pro Asp  
1355 1360 1365

Val Glu Glu Gln Ser Pro Glu Ser Cys Gly Arg Ile Leu Ala Asn  
1370 1375 1380

Trp Leu Lys Val Lys Phe Met Gly Asp Glu Gly Ser Val Asp Asp  
1385 1390 1395

Thr Ser Ser Asp Ala Gly Gly Ile Gln Thr Leu Ser Leu Phe Asn  
1400 1405 1410

Ser Leu Ser Ser Lys Gly Asp Gln Met Ile Ser Val Asn Val Cys  
1415 1420 1425

Ile Lys Val Ala His Gly Ala Leu Ser Asp Gly Ala Ile Asp Ala  
1430 1435 1440

Val Glu Thr Gln Lys Asp Leu Leu Gly Ala Ser Gly Leu Met Leu  
1445 1450 1455

Leu Leu Pro Pro Lys Met Lys Ser Glu Asp Met Ala Glu Glu Asp  
1460 1465 1470

Val Tyr Trp Leu Ser Ala Leu Leu Gln Leu Lys Gln Leu Leu Gln  
1475 1480 1485

Ala Lys Pro Phe Gln Pro Ala Leu Pro Leu Val Val Leu Val Pro  
1490 1495 1500

Ser Pro Gly Gly Asp Ala Val Glu Lys Glu Val Glu Asp Gly Leu  
1505 1510 1515

Met Leu Gln Asp Leu Val Ser Ala Lys Leu Ile Ser Asp Tyr Thr  
1520 1525 1530

Val Thr Glu Ile Pro Asp Thr Ile Asn Asp Leu Gln Gly Ser Thr  
1535 1540 1545

Lys Val Leu Gln Ala Val Gln Trp Leu Val Ser His Cys Pro His  
1550 1555 1560

Ser Leu Asp Leu Cys Cys Gln Thr Leu Ile Gln Tyr Val Glu Asp  
1565 1570 1575

Gly Ile Gly His Glu Phe Ser Gly Arg Phe Phe His Asp Arg Arg  
1580 1585 1590

Glu Arg Arg Leu Gly Gly Leu Ala Ser Gln Glu Pro Gly Ala Ile  
1595 1600 1605

Ile Glu Leu Phe Asn Ser Val Leu Gln Phe Leu Ala Ser Val Val  
1610 1615 1620

Ser Ser Glu Gln Leu Cys Asp Leu Ser Trp Pro Val Thr Glu Phe  
1625 1630 1635

Ala Glu Ala Gly Gly Ser Arg Leu Leu Pro His Leu His Trp Asn  
1640 1645 1650

Ala Pro Glu His Leu Ala Trp Leu Lys Gln Ala Val Leu Gly Phe  
1655 1660 1665

Gln Leu Pro Gln Met Asp Leu Pro Pro Leu Gly Ala Pro Trp Leu  
1670 1675 1680

Pro Val Cys Ser Met Val Val Gln Tyr Ala Ser Gln Ile Pro Ser  
1685 1690 1695

Ser Arg Gln Thr Gln Pro Val Leu Gln Ser Gln Val Glu Asn Leu  
1700 1705 1710

Leu His Arg Thr Tyr Cys Arg Trp Lys Ser Lys Ser Pro Ser Pro  
1715 1720 1725

Val His Gly Ala Gly Pro Ser Val Met Glu Ile Pro Trp Asp Asp  
1730 1735 1740

Leu Ile Ala Leu Cys Ile Asn His Lys Leu Arg Asp Trp Thr Pro  
1745 1750 1755

Pro Arg Leu Pro Val Thr Ser Glu Ala Leu Ser Glu Asp Gly Gln  
1760 1765 1770

Ile Cys Val Tyr Phe Phe Lys Asn Asp Leu Lys Lys Tyr Asp Val  
1775 1780 1785

Pro Leu Ser Trp Glu Gln Ala Arg Leu Gln Thr Gln Lys Glu Leu  
1790 1795 1800

Gln Leu Arg Glu Gly Arg Leu Ala Ile Lys Pro Phe His Pro Ser  
1805 1810 1815

Ala Asn Asn Phe Pro Ile Pro Leu Leu His Met His Arg Asn Trp  
1820 1825 1830

Lys Arg Ser Thr Glu Cys Ala Gln Glu Gly Arg Ile Pro Ser Thr  
1835 1840 1845

Glu Asp Leu Met Arg Gly Ala Ser Ala Glu Glu Leu Leu Ala Gln  
1850 1855 1860

Cys Leu Ser Ser Ser Leu Leu Leu Glu Lys Glu Glu Asn Lys Arg  
1865 1870 1875

Phe Glu Asp Gln Leu Gln Gln Trp Leu Ser Glu Asp Ser Gly Ala  
1880 1885 1890

Phe Thr Asp Leu Thr Ser Leu Pro Leu Tyr Leu Pro Gln Thr Leu

1895

1900

1905

Val Ser Leu Ser His Thr Ile Glu Pro Val Met Lys Thr Ser Val  
1910 1915 1920

Thr	Thr	Ser	Pro	Gln	Ser	Asp	Met	Met	Arg	Glu	Gln	Leu	Gln	Leu
1925						1930					1935			

Ser Glu Ala Thr Gly Thr Cys Leu Gly Glu Arg Leu Lys His Leu  
 1940 1945 1950

Glu Arg Leu Ile Arg Ser Ser Arg Glu Glu Glu Val Ala Ser Glu  
 1955 1960 1965

Leu His Leu Ser Ala Leu Leu Asp Met Val Asp Ile  
1970 1975 1980

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33

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36

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20

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<223> Primer used in the preparation of GANP-Transgenic (Tg) Mouse

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<212> DNA
<213> Artificial sequence

<220>
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<212> DNA
<213> Artificial sequence

<220>
<223> CGK3'-2 Primer

<400> 10
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<210> 11
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<212> DNA
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<223> GANP1-5' Primer

<400> 11
ggggatccat acccggtgaa cccctt 26

<210> 12
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<212> DNA
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<210> 13  
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<210> 14  
<211> 28  
<212> DNA  
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<210> 15  
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<220>  
<223> GANP3-5' Primer

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<210> 16  
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<212> DNA  
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<210> 17  
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<212> DNA		
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<210> 22		

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gcaggggctc ctcctgatct		20

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<220>
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<400> 28
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<210> 29
<211> 41
<212> DNA
<213> Artificial sequence

<220>
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<210> 30
<211> 27
<212> DNA
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<212> DNA
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<220>
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<212> DNA	
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<212> DNA	
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28

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<222> (1)..(98)  
<223> Fig. 10 WT

<400> 37

Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys Pro Gly Ala  
1 5 10 15

Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr  
20 25 30

Trp Met His Trp Val Lys Gln Arg Pro Gly Arg Gly Leu Glu Trp Ile  
35 40 45

Gly Arg Ile Asp Pro Asn Ser Gly Gly Thr Lys Tyr Asn Glu Lys Phe  
50 55 60

Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Pro Ser Ser Thr Ala Tyr  
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys  
85 90 95

Ala Arg

<210> 38  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)

<223> Fig. 10 WT

<400> 38  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 39  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(39)  
<223> Fig. 10: WT-4

<400> 39  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc gagt 294

<210> 40  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 10: WT-5

<400> 40  
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tcctgcaagg cttctggcta cacccacc atctacttaa tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaact tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

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<210> 41
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 10: WT-6
<400> 41
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tcctgcaagg cttctggcta caccttcacc agttacttga tgcactgggt gaagcagggg      120
cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtac      180
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc gagt      294

<210> 42
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 10: WT-9
<400> 42
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg      60
tcctgcaaga cttctggcta ctccttcacc agctacttta tacactgggt gaagcagagg      120
cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtac      180
aatgagaaat tcaagagcag ggccacactg actgttagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga      294

<210> 43
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 10: WT-10
<400> 43
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg      60

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tcctgcaagg cttctggcta caccttcacc agctactgga tgcactggat gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaggtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggct 294

<210> 44  
<211> 294  
<212> DNA  
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<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 10: WT-11

<400> 44  
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tcctgcaagg cttctggcta caccttcacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttaggca aaccctccag cacagcctac 240  
atgcggctca gcagcctgac atctgaggac tctgcggct 294

<210> 45  
<211> 294  
<212> DNA  
<213> *Mus musculus*

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 10: WT-14

<400> 45  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta caccttcacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttgaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggct 294

<210> 46  
<211> 294  
<212> DNA  
<213> *Mus musculus*

<220>  
 <221> misc\_feature  
 <222> (1)..(294)  
 <223> Fig. 10: WT-16

<400> 46  
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 tcctgcaagg cttctggcta cacccacc aactacttga tgcactgggt gaagcagagg 120  
 cctggacgag gccttgggtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
 aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
 atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc gagt 294

<210> 47  
 <211> 294  
 <212> DNA  
 <213> Mus musculus

<220>  
 <221> misc\_feature  
 <222> (1)..(294)  
 <223> Fig. 10: WT-17

<400> 47  
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 tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagagg 120  
 cctggacgag gccttgggtg gatttgaagg attgatccta atagtggtgg ttctaagtac 180  
 aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
 atgcacactca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 48  
 <211> 294  
 <212> DNA  
 <213> Mus musculus

<220>  
 <221> misc\_feature  
 <222> (1)..(294)  
 <223> Fig. 10: WT-18

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 tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagagg 120  
 cctggacgag gccttgggtg gatttgaagg attgatccta atagtggtgg tactaagtac 180

aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcgatct attattgtgc aaga	294
<210> 49	
<211> 294	
<212> DNA	
<213> Mus musculus	
<220>	
<221> misc_feature	
<222> (1)..(294)	
<223> Fig. 10: WT-19	
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tcctgcaagg cttctggcta caccttcacc agctactgga tgcactgggt gaagcagagg	120
cctggacgag gccttgagtg gatttgaagg attgttccta atagtggta tactaagtac	180
aatgagaagt tcaagaacaa ggccacactg actgtagaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga	294
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cctggacgag gccttgagtg gatttgaagg attgttccta atagtggta tactaggtac	180
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctcc	240
atgcagctca gcagcctgac atctgaggac tctgcggtct attactgtgc aaga	294
<210> 51	
<211> 294	
<212> DNA	
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<222> (1)..(294)	

<223> Fig. 10: WT-21

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tcctgcaagg cttctggcta cacccacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gattggagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aagg 294

<210> 52  
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<212> DNA  
<213> Mus musculus

<220>  
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<222> (1)..(294)  
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tcctgcaagg cttctggcta cacccacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gattggagg attgatccta atagtggtta tactaggtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctcc 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 53  
<211> 98  
<212> PRT  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(98)  
<223> Fig. 10 TG

<400> 53

Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys Pro Gly Ala  
1 5 10 15

Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr  
20 25 30

Trp Met His Trp Val Lys Gln Arg Pro Gly Arg Gly Leu Glu Trp Ile

35

40

45

Gly Arg Ile Asp Pro Asn Ser Gly Gly Thr Lys Tyr Asn Glu Lys Phe  
50 55 60

Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Pro Ser Ser Thr Ala Tyr  
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys  
85 90 95

Ala Arg

<210> 54  
<211> 294  
<212> DNA  
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<220>  
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<222> (1)..(294)  
<223> Fig. 10 TG

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cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggct 294

<210> 55  
<211> 294  
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<220>  
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<222> (1)..(294)  
<223> Fig. 10: Tg-3

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cctggacgag gccttgagtg gattggaagg attgatccta atcgtggtgg tactaagtac 180

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aatgagaagt tcattaacaa ggccacactg actgtagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggctc attattgtgc aaga      294

<210> 56
<211> 294
<212> DNA
<213> Mus musculus

<220>
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<222> (1)..(294)
<223> Fig. 10: Tg-4

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cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtg tactaagtac      180
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggctc attattgtgc aaga      294

<210> 57
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 10: Tg-5

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tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagagg      120
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtg tactaagtac      180
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac acctgaggac tctgcggctc attattgtgc aaga      294

<210> 58
<211> 294
<212> DNA
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<220>
<221> misc_feature

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<222> (1)..(294)

<223> Fig. 10: Tg-7

<400> 58

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cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac	180
aatgagaagt tcaagagcaa gcccacactg actgtagaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga	294

<210> 59

<211> 294

<212> DNA

<213> Mus musculus

<220>

<221> misc\_feature

<222> (1)..(294)

<223> Fig. 10: Tg-8

<400> 59

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tcctgcaagc cttctggcta cacccacc accctactgga tacactgggt gaggcagagg	120
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac	180
aatgagaagt tcaagagcaa gcccacactg actgtagaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga	294

<210> 60

<211> 294

<212> DNA

<213> Mus musculus

<220>

<221> misc\_feature

<222> (1)..(294)

<223> Fig. 10: Tg-9

<400> 60

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tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagagg	120
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac	180
aatgagaagt tcaagagcaa gcccacactg actgtagaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga	294

<210> 61  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
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<222> (1)..(294)  
<223> Fig. 10: Tg-10

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tcctgcaagg cttctggcta caccttcaac agttactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aatcctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 62  
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<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 10: Tg-11

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tcctgcaagg cttctggcta caccttacc agctacttga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccttccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 63  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 10: Tg-12

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tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtgggt tactaagtac 180  
aatgagaagt tcaagagcaa gcccacactg actgtagaca aaccctccag cacgcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 64  
<211> 294  
<212> DNA  
<213> Mus musculus  
<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 10: Tg-13

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tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagtg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtgggt tactaagtac 180  
aatgagaagt tcaagaacaa gcccacactg actgtagaca aaccctccag cacgcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 65  
<211> 294  
<212> DNA  
<213> Mus musculus  
<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 10: Tg-14

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cctggacgag gccttgagtg gatttgaagg attgatccca atagtgggt tactaagtac 180  
aatgagaagt tcaggagcag gcccacactg actgtagaca aaccctccag cacgcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 66

<211> 294  
 <212> DNA  
 <213> Mus musculus  
  
 <220>  
 <221> misc\_feature  
 <222> (1)..(294)  
 <223> Fig. 10: Tg-15  
  
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 cctggacgag gccttgagtg gatttgaagg atcgatccta atagtggtgg cactaagtac 180  
 aaagagaagt tcaagagcaa gcccacactg actgtagaca aaccctccag cacagcctac 240  
 atgcagctca gcagcctgac atctgaggac tctgcggct 294  
  
 <210> 67  
 <211> 294  
 <212> DNA  
 <213> Mus musculus  
  
 <220>  
 <221> misc\_feature  
 <222> (1)..(294)  
 <223> Fig. 10: Tg-16  
  
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 cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
 aatgagaagt tcaagaacaa gcccacactg actgtagaca aaccctccag cacagcctac 240  
 atgcacctca gcagcctgac atctgaggac tctgcggct 294  
  
 <210> 68  
 <211> 294  
 <212> DNA  
 <213> Mus musculus  
  
 <220>  
 <221> misc\_feature  
 <222> (1)..(294)  
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cctggacgag gccttgagtg gatttgaagg attgatccta attctggtgg tactaagtac	180
aatgagaagt tcaagaccaa ggccacactg actgttagaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga	294
<210> 69	
<211> 294	
<212> DNA	
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<222> (1)..(294)	
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tcctgcaagg cttctggcta cattttcacc agctacactga tgcactgggt gaagcagagg	120
cctggacgag gccttgagtg gatttgaagg attgatccta atcgtggtgg tactaagtac	180
aatgagaagt tcattaacaa ggccacactg actgttagaca aaccctccac cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga	294
<210> 70	
<211> 294	
<212> DNA	
<213> <i>Mus musculus</i>	
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<222> (1)..(294)	
<223> Fig. 10: Tg-20	
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tcctgcaagg cttctggcta caccttcacc agctactgga tgcactgggt gaagcagagg	120
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaggtac	180
aatgagaggt tcaagagcaa ggccacactg tctgttagaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga	294
<210> 71	
<211> 294	
<212> DNA	
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<220>
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<222> (1)..(294)
<223> Fig. 10: Tg-21

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cctggacgag gccttgagtg gatttgaagg attgatccta atatgtgtgg tactaagtac 180
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 72
<211> 294
<212> DNA
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<223> Fig. 10: Tg-23

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cctggacgag gccttgagtg gatttgaagg attgatccta atatgtgtgg tactaagtac 180
aatgagaagt tcaagaccaa ggccacactg actgttagaca aaccctccag cacagcctac 240
atgcagctca gcagtcgtac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 73
<211> 98
<212> PRT
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(98)
<223> Fig. 20A-20F Cre-flox/+

<400> 73

Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys Pro Gly Ala
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Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

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Trp Met His Trp Val Lys Gln Arg Pro Gly Arg Gly Leu Glu Trp Ile  
35 40 45

Gly Arg Ile Asp Pro Asn Ser Gly Gly Thr Lys Tyr Asn Glu Lys Phe  
50 55 60

Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Pro Ser Ser Thr Ala Tyr  
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys  
85 90 95

Ala Arg

<210> 74  
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cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac 240  
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<210> 75  
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<222> (1)..(294)  
<223> Fig. 20: 1-5

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tcctgcaagg cttctgccta cacccacc agttactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtgggt tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
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<210> 76  
<211> 294  
<212> DNA  
<213> *Mus musculus*

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 1-6

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cctggacgag gccttgagtg gatttgaagg attgatccta atagtgggt tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
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<210> 77  
<211> 294  
<212> DNA  
<213> *Mus musculus*

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 3-1

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cctggacgag gccttgagtg gatttgaagg attgatccta atagtggta tacaaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
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<210> 78  
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<212> DNA  
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<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 3-2

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cctggacgag gccttgagtg gatttgaagg attgatccta tgagtggtgg cagtaggtac      180
aatgagttact tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac actgcggctcg attattgtgc aaga      294

<210> 79
<211> 294
<212> DNA
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<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 3-3

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cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac      180
aatgagaagt tcaagagcaa ggccacattg actgttagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggctcg attattgtgc aaga      294

<210> 80
<211> 294
<212> DNA
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<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 4-2

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tcctgcaagg cttctggtta cacccctcacc acctacttaa tgcactgggt gaagcagagg      120
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac      180

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aatgagaagt tcaagagcaa ggccacactg actata gaca aaccctccag cacagcctac	240
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<210> 81	
<211> 294	
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<213> Mus musculus	
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<221> misc_feature	
<222> (1)..(294)	
<223> Fig. 20: 4-4	
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cctggacgag gccttgagtg gattgaaagg attgatccta atagtggtgg tactaagtac	180
aatgagaagt tcaagagcaa ggccacactg actata gaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggct attattgtgc aagg	294
<210> 82	
<211> 294	
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<221> misc_feature	
<222> (1)..(294)	
<223> Fig. 20: 4-6	
<400> 82	
caggtccaa tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg	60
tcctgcaagg cttctggcta caccctcacc acctacttaa tgcactgggt gaagcagagg	120
cctggacgag gccttgagtg gattgaaagg attgatccta atagtggtgg tactaagtac	180
aatgagaagt tcaagagcaa ggccacactg actata gaca aaccctccag cacagcctac	240
atgcagctca gcagcctgac atctgaggac tctgcggct attattgtgc aagg	294
<210> 83	
<211> 294	
<212> DNA	
<213> Mus musculus	
<220>	
<221> misc_feature	
<222> (1)..(294)	

<223> Fig. 20: 1-8

<400> 83  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc accctacttga tacactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta aaagtggtgg tactaagtac 180  
agtgagaagt tcaagagcaa ggccacactg actgttagacc aaccctccag cacagcctac 240  
atgcagttca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 84  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 1-10

<400> 84  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc accctacttga ttcaactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg gttgatccta atactggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 85  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 4-7

<400> 85  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctgggggttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc accctacttta tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtga tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca acagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

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<210> 86
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 6-1

<400> 86
caggtccaaac tgcagcagcc tgggactgag cttgtgaagc ctggggcttc agtgaagctg      60
tcctgcaagg cttctggctt caccttcacc agctacttga tgcactgggt gaaacagagg      120
cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtac      180
aatgagacgt tcaagaacaa gcccacactg actgtagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga      294

<210> 87
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 6-2

<400> 87
caggtccaaac tgcagcagcc tggggctgag ctgtgaagc ctggggcttc agtgaagggt      60
tcctgcaagg cttctggcta caccttcacc agctacttga tgcactgggt gaagcagagg      120
cctggacgag gccttgagtg gattggaagg attgatccta atagtggttag tactaagtac      180
aatgagaagt tcaagaccaa gcccacactg actgtagaca aaccctccag tacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga      294

<210> 88
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 7-1

<400> 88
caggtccaaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg      60

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tcctgcaagg cttctggcta caccttcacc aactacttga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttggagg attgatccta atagtggtgg tactaagtac 180  
aatgagacgt tcaagaacaa ggcacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 89  
<211> 98  
<212> PRT  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(98)  
<223> Fig.20G-20L B-Gapn-/-

<400> 89

Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys Pro Gly Ala  
1 5 10 15

Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr  
20 25 30

Trp Met His Trp Val Lys Gln Arg Pro Gly Arg Gly Leu Glu Trp Ile  
35 40 45

Gly Arg Ile Asp Pro Asn Ser Gly Gly Thr Lys Tyr Asn Glu Lys Phe  
50 55 60

Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Pro Ser Ser Thr Ala Tyr  
65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys  
85 90 95

Ala Arg

<210> 90  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature

<222> (1)..(98)  
<223> Fig.20G-20L B-Ganp-/-

<400> 90  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 91  
<211> 294  
<212> DNA  
<213> *Mus musculus*

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 1-1

<400> 91  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc agctactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagtaa ggccacactg actgtagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc acga 294

<210> 92  
<211> 294  
<212> DNA  
<213> *Mus musculus*

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 1-5

<400> 92  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgattctg 60  
tcctgcaagg cttctgccta cacccacc agttactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

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<210> 93
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 1-6

<400> 93
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg      60
tcctgcaagg cttctggcta caccttcacc agctactgga tgcactgggt gaagcagagg      120
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac      180
aatgagaagt tcaagagcaa ggccacactg actgttagaca aaccctccag cacagcctac      240
atgcaactca gcagcctgac atctgaggac tctgcggctc attattgtgc aaga      294

<210> 94
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 2-2

<400> 94
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg      60
tcctgcaagg cttcgggcta caccttcacc aactatttggc tgcactgggt gaagcagagg      120
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg ttctaagtac      180
aatgagaagt tcaagagcaa ggccacactg actgcagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggctc attactgtgc aaga      294

<210> 95
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 2-3

<400> 95

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caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc aactactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gattgaaat attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagaacaa ggccacacta actgtggaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 96  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 4-3

<400> 96  
caggtccaac tgcagcagcc tggactgaa ctgggtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gattgaaat attaattccta atagtggtgg tactaactac 180  
aatgagaagt tcaagagcaa ggccacactg actgttagaca aatcctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attactgtgc aaga 294

<210> 97  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 4-4

<400> 97  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta cacccacc aactactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gattgaaagg attgatccta atgggtgggg tactaagtac 180  
aatgagaagt tcaagaccaa ggccacactg actgttagaca aaccctccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 98  
<211> 294

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<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 6-1

<400> 98
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tcctgcaagg cttctggcta cactttaacc agctactgga tgcactgggt gaagcagagg      120
cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtat      180
aatgaggagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggct actattgtgc aaga      294

<210> 99
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 6-2

<400> 99
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg      60
tcctgcaagg cttctggcta cactttaacc agctactgga tgcactgggt gaagcagagg      120
cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtat      180
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac      240
atgcagctca gcagcctgac atctgaggac tctgcggct actattgtgc aaga      294

<210> 100
<211> 294
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)..(294)
<223> Fig. 20: 7-1

<400> 100
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg      60
tcctgcaagg cttctggcta caccttcacc agctgctgga tgcactgggt gaagcagagg      120

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cctggacgag gccttgagtg gattggaagg attgatccta atggtggtgg tactaagttc 180  
 gatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctat 240  
 atgcaactca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga 294

<210> 101  
 <211> 294  
 <212> DNA  
 <213> Mus musculus

<220>  
 <221> misc\_feature  
 <222> (1)..(294)  
 <223> Fig. 20: 8-1

<400> 101  
 caggtccaaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
 tcctgcaagg cttctggcta cacccacc aactacttga tgcactgggt gaagcagagg 120  
 cctggacgag gccttgagtg gattggaagg attgatccta atagtggtgg tactaagtac 180  
 aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac 240  
 atgcagctca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga 294

<210> 102  
 <211> 294  
 <212> DNA  
 <213> Mus musculus

<220>  
 <221> misc\_feature  
 <222> (1)..(294)  
 <223> Fig. 20: 8-2

<400> 102  
 caggtccaaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
 tcctgcaagg cttctggcta cacccacc agctacttga tgcactgggt gaagcagagg 120  
 cctggacgag gccttgagtg gattggaagg attgatccta atggtggtgg tactaaatac 180  
 aatgagaggt tcaagagcaa ggccacactg actgtagaca aaccctccag cacagcctac 240  
 atgcagttca gcagcctgac atctgaggac tctgcggtct attattgtgc aaga 294

<210> 103  
 <211> 294  
 <212> DNA  
 <213> Mus musculus

<220>

<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 9-1

<400> 103  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaagg cttctggcta caccttcacc aactactgga tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tgccaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aaccttccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 104  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 9-3

<400> 104  
caggtccaac tgcagcagcc tggggctgag cttgtgaagc ctggggcttc agtgaagctg 60  
tcctgcaaga cttctggcta caccttcacc acctactggc tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttggagg attgatccta atagtggcgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aacccttccag cacagcctac 240  
atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga 294

<210> 105  
<211> 294  
<212> DNA  
<213> Mus musculus

<220>  
<221> misc\_feature  
<222> (1)..(294)  
<223> Fig. 20: 9-4

<400> 105  
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tcctgcaagg cttctggcta caccttcacc agctatttggc tgcactgggt gaagcagagg 120  
cctggacgag gccttgagtg gatttgaagg attgatccta atagtggtgg tactaagtac 180  
aatgagaagt tcaagagcaa ggccacactg actgtagaca aacccttccag cacagcctac 240

atgcagctca gcagcctgac atctgaggac tctgcggctt attattgtgc aaga

294